THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today

- (1) was not written for publication in a law journal and
- (2) is not binding precedent of the Board.

Paper No. 55

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS

AND INTERFERENCES

Ex parte FLORIS L. VAN NES

Appeal No. 95-1423 Application 07/928,883¹

ON BRIEF

Before MARTIN, FLEMING and TORCZON, <u>Administrative Patent</u> <u>Judges</u>.

¹ Application for patent filed August 11, 1992. According to appellant, the application is a continuation of Application 07/608,594, filed October 29, 1990, abandoned; which is a continuation of Application 07/312,319, filed February 16, 1989, abandoned; which is a continuation of Application 07/043,520, filed April 28, 1987, abandoned.

FLEMING, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the final rejection of claims 40, 41 and 61-77. Claims 1-39, 42-56, and 58-60 have been canceled by applicant and claim 57 stands allowed by the Examiner.

The invention is directed to a character display unit having a picture memory for storing characters in a multicolor frame and a color transforming mechanism for "crosscolor mapping" at least part of the characters. Color changes of certain characters may be made manually or automatically, based on the type or position of certain selected characters, not based on content. The color transformations are intended to improve the overall legibility of a displayed page.

Figure 1 diagrammatically represents the operation of the claimed color transformation apparatus. Specifically, circle 20 represents the color transforming mechanism with alternative input color and character signals on arrows 22 and 24 and corresponding transformed output color and character signals on arrows 26 and 28, respectively (page 4, lines 36-37).

On arrow 22, each input element or character has an associated color indicator for a specific predetermined color:

red (R), green (G) and/or blue (B) (page 5, lines 2-5). Arrow 24 shows an alternative input where the characters/supporting elements are subdivided into groups with each group having color indicators, K_1 , K_2 , K_3 , . . . , which are not assigned to a specific color (page 5, lines 10-16).

Arrow 26 shows one output option where each specifically assigned input color indicator is converted into a single specifically assigned output color indicator according to a fixed conversion pattern (page 5, lines 17-29). Under this output option, one or more of the input colors may be displayed as a different output color.

Arrow 28 shows an alternative output option where each assigned input color indicator K_j , is assigned an output color based on character type/location (page 5, lines 30-34). The specification is less than clear as to how these color values are assigned except to say that they can be manually chosen by the designer or automatically chosen according to several

tables listing color values in order of contrast on pages 6 and 7 of the specification.

Specific embodiments are shown in block diagram form in Figs. 2 and 3. Block 30 represents a keyboard or other memory

device to supply character information signals on line 33 and synchronizing signal information on line 31 to a picture memory 34. In the case of Fig. 2, the picture memory is preceded by a histogram former 32, which detects color indicator signals. A picture memory 34 stores one or more pages of information or a bit map. The stored information is then transmitted to a charac- ter generator 36, which receives information about each character or bit, including a color code (page 10, lines 9-23). These com- ponents receive a synchronizing signal from control unit 42 so that the character code information can be consecutively read and converted into pixels having a three bit color indication (page 10, lines 32-34). The claimed apparatus can also detect specific character categories and/or specific text configurations in the output signal of the character generator by means of a detector in the character generator which is set by

control unit 52 (page 11, lines 6-14). The output signal of the charac- ter generator is received by the transforming device 38, which acts on the signal according to the strategy received from the histogram former 32 and/or control unit 54 to convert the character code color information or to leave it unchanged (page 12, lines 15-22).

Independent claims 61 and 69, reproduced below, are representative:

61. A character display unit, comprising:

a picture memory for storing all characters displayable in a multi-color frame together with color code information defining a plurality of respective hues,

color transforming means having an input connected to the picture memory for cross-color mapping at least part of said characters according to a color look-up table, and

display means for displaying said frame and having an input connected to the color transforming means, wherein

said color transforming means are controllable in a first and in a second state, such that

- i) in said first state said color transforming means are operative for mapping two of said respective hues on a single destination hue in said multi-color frame, and
- ii) in said second state said color transforming means are operative for mapping two of

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said respective hues on at least two respective destination hues in said multi-color frame.

69. A character display unit, comprising:

a picture memory for storing all characters displayable in a multi-color frame;

color transforming means having an input connected to said picture memory for cross-color mapping at least part of said characters, and

display means for displaying said frame and having an input connected to said color transforming means, wherein

said color transforming means are controllable in a first and second state, and operative for

- i) in said first state, mapping at least a first selection of said stored characters on a first destination hue and a second selection of said stored characters on a second destination hue as based on content and/or supporting elements of said first and second selections, respectively, and in [sic]
- ii) in said second state, mapping all characters of said first and second selections on a single destination hue.

The examiner relies on the following references:

Staar	4,016,365		Apr.	5,	1977
Iwai et al. (Iwai)	4,710,806		Dec.	1,	1987
		(filed	June	24,	1986)
Havel	4,734,619		Mar.	29,	1988
		(filed	July	7,	1986)
Nopp et al. (Nopp) (Canadian patent)	1,200,631		Feb.	11,	1986

Practiword 1.05, 5 <u>PC Magazine</u>, no. 2, 159-61, 173-74 (Jan. 28, 1986)

The specification is objected to under 35 U.S.C. § 112, first paragraph, as failing to provide an adequate written description of the invention as now claimed because it does

not provide support for the claimed "color look-up table." Claims 40, 41, 61-68 and 75 stand rejected under 35 U.S.C. § 112, first paragraph, for the reasons set forth in the objection to

the specification. Claims 40, 41, 62-68 and 75 stand rejected as being dependent on a rejected base claim (claim 61).

Additionally, the following claims stand rejected under 35 U.S.C. § 103 over the prior art: (1) claims 40, 41, 61, 64-66, 68, 69 and 76-77 over Nopp in view of Havel; (2) claims 62, 63, 67 and 73 over Nopp in view of Havel, as applied to claims 61 or 69, and further in view of Iwai; (3) claims 70-72 and 74-75 over Nopp in view of Havel, as applied to claim 61 or 69 above, and further in view of PC Magazine or Staar.

Rather than reiterate the arguments of Applicant and the Examiner, reference is made to the brief and answer for the respective details thereof.

OPINION

After a careful review of the entire record including Applicant's Brief and the Examiner's Answer, we sustain the rejection of claims 40, 41, 61-68 and 75 for lack of written description under 35 U.S.C. § 112, first paragraph. We also

sustain the following rejections because we conclude that the claims would have been obvious to one of ordinary skill in the art within the meaning of 35 U.S.C. § 103 as follows:

(1) claims 40, 41, 61, 64-66, 68, 69 and 76-77 over Nopp in view of Havel; (2) claims 62, 63, 67 and 73 over Nopp in view of Havel and further in view of Iwai; (3) claims 70-72 and 74-75 over Nopp in view of Havel and further in view of PC

Magazine or Staar.

At the outset, we note that Appellant states on page 3 of his brief that the claims are divided into two groups which stand or fall together: (1) claims 40, 41, 61-68 and 75; and

(2) claims 69-74, 76 and 77. All claims in group 1 depend directly from independent claim 61. All claims in group 2 depend, directly or indirectly, from independent claim 69. Within each group, the individual claims have not been argued separately with any reasonable degree of specificity. Accordingly, the claims of group 1 will be considered to stand or fall together with claim 61 and the claims of group 2 will be considered to stand or fall together with claim 69. See, e.g., In re Nielson, 816 F.2d 1567, 1572, 2 USPQ2d 1525, 1528 (Fed. Cir. 1987).

REJECTION UNDER § 112, ¶ 1

The written description requirement requires that an applicant must "convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in

possession of the invention." <u>Vas-Cath Inc. v. Mahurkar</u>, 935 F.2d 1555, 1563-64, 19 USPQ2d 1111, 1117 (Fed. Cir.

1991)(quoted in Hyatt v. Boone, 146 F.3d 1348, 1354, 47 USPQ2d 1128, 1132 (Fed. Cir. 1998)). When a claimed limitation is not expressly described and inherency is relied on to support that limitation, an applicant is required to establish that

the necessary and only reasonable construction to be given the disclosure by one skilled in the art is one which will lend clear support for the limita- tion in question. Hyatt, 146 F.3d at 1354-55, 47 USPQ2d at 1132 (reconciling various verbal expressions of the written descrip- tion test as requiring the same showing for compliance with the statute); Kennecott Corp. v. Kyocera Int'l, Inc., 835 F.2d 1419, 1423, 5 USPQ2d 1194, 1198 (Fed. Cir. 1987), cert. denied, 486 U.S. 1008 (1988); Langer v. Kaufman, 465 F.2d 915, 918, 175 USPQ 172, 174 (CCPA 1972).

Although a written description "does not have to describe exactly the subject matter claimed, . . . the description must

clearly allow persons of ordinary skill in the art to recognize that [he or she] invented what is claimed." In re Gosteli, 872 F.2d 1008, 1012, 10 USPQ2d 1614, 1618 (Fed. Cir. 1989)(citation omitted).

The examiner argues on page 9 of the answer that claims 40, 41, 61-68 and 75 lack written description in the specification to support the claimed "color look-up table."

Appellant's specifi- cation as filed does not explicitly use

the words "color look-up table." However, Appellant argues on page 3 of the brief that the disclosure on page 6 of the specification, considered in conjunction with the disclosure on pages 10-11, provide descrip- tive support that transforming device 38 may be a "color look-up table."

Page 6 of the specification describes various color display options for text pictures, based on character type, character frequency and color contrast. No reference is made in this por- tion of the specification to a "color look-up table." Page 11 generally describes the transforming device of block 38 as capa- ble of transforming characters into any one of eight different available colors (page 11, lines 1-3). More specifically, the functioning of block 38 is described as follows:

Control unit 54 accordingly forms setting signals for the transforming device 38. These signals indicate the respective modes, for example "unchanged", "display according to column A of table 1", "display characters in a specific manner according to detection by the detector of character generator 36". Actually, the logic circuits for the abovementioned detection and control are elementary and are not further discussed

for the sake of shortness. Thus a picture in two or more colours can appear at the output of transforming device 38. A uni-coloured picture (plus a different background colour) can also appear, but this is already known.

(Page 11, lines 14-23.) This description says nothing about the structure or components of transforming device 38.

Although the specification describes the function of transforming device 38 as responding to control signals from various components to effect a color change in certain output characters, there is no description of whether this is done by a "color look-up table" or by some other kind of circuitry. It is not even clear that the protocol used to transform colors would come from the transforming device 38 itself, or from some external control circuit such as the histogram former 32, character generator 36 or control unit 54.

As the Examiner noted on page 9 of the answer, "[a] trans- forming device is not always a look-up table," and it could be

any number of circuit elements including discrete logic devices, analog devices with A/D converters, or a microprocessor which calculates an algorithm for color

conversion. We find the Examiner's interpretation of a lookup table to require the retrieval of previously stored values. Upon a review of Appellant's specification, we fail to find any previously stored values for color transformation. In any case, appellant has not established that the "necessary and only" reasonable construction of this disclosure supports the claimed "color look-up table." For purposes of satisfying the written description requirement, it is not enough that one may find it obvious to provide a claimed limitation, rather, the limitation in question must be expressly described or otherwise supported by the disclosure. See Lockwood v. American Airlines Inc., 107 F.3d 1565, 1572, 41 USPQ2d 1961, 1966 (Fed. Cir. 1997) ("One shows that one is 'in possession' of the invention by describing the invention, with all its claimed limitations, not that which makes it obvious." (emphasis in original) (quoted in <u>University of California v.</u> Eli

Lilly and Co., 119 F.3d 1559, 1566, 43 USPQ2d 1398, 1404 (Fed. Cir. 1997))). Accordingly, the rejection is sustained.

REJECTIONS UNDER § 103

Over Nopp in view of Havel. As an initial matter, we must interpret the scope of the claims prior to considering whether they would have been obvious in view of the prior art. See Rockwell Int'l Corp. v. United States, 147 F.3d 1358, 1362, 47 USPQ2d 1027, 1029 (Fed. Cir. 1998) ("The first step in any invalidity or infringement analysis is claim construction.").

Claim 61 is directed to a character display unit comprising a picture memory, color transforming means which performs cross- color mapping according to a color look-up table, display means, wherein the color transforming means is controllable in a first and second state. In the first state, the color transforming means maps "two of said respective hues on a single destination hue," and in the second state it maps "two of said respective hues on at least two respective destination hues."

Claim 69 differs from claim 61 in two ways: (1) no color look-up table is claimed; and (2) the "cross-color mapping" of

characters is based on the "content and/or supporting elements" of the characters being mapped in the first and second states or the color transforming means.

Appellant's specification fails completely to define "cross-color mapping" and is less than clear in its description of how the different states function. However, during examination, we are required to give the claims their broadest reasonable inter- pretation consistent with the specification. In re Morris, 127 F.3d 1048, 1054, 44 USPQ2d 1023, 1027 (Fed. Cir. 1997). Accord- ingly, given the broadest reasonable interpretation, we construe the claimed "cross-color mapping" to merely require transforming one or more input colors to one or more different output The two states described in claim 61, therefore, merely require a first state where two hues or input colors are transformed to a single output hue or color, and a second state where two input hues or colors are transformed to two respective output hues or colors, which may or may not be different from the input color. The same is true of the two states in claim 69, however the color transformations of claim

69 take into account related character and/or supporting element information.

Turning now to the prior art, with respect to claim 61,

Nopp teaches all of the claimed elements with the exception of
a "cross-color mapping" whereby an input color is changed to
a

different output color. Specifically, Nopp teaches a control arrangement for a multi-colored visual display unit to be used with characters, graphic patterns and/or other multi-color images such as a television picture (page 2, lines 1-6). Nopp recog- nizes the problem of legibility in color displays due to low contrast of relatively dark characters and the relative lack of sensitivity of the eye (Nopp page 3, lines 6-10). Nopp seeks to remedy this by adjusting the brightness of the displayed colors to create greater contrast (Nopp page 4, lines 8-17).

Nopp discloses a picture memory or "image store" (page 5, lines 12-13) and a display unit AE with a screen (page 8, line 28 to page 9, line 1 and Fig. 2). Additionally, Nopp

discloses a control unit (Figs. 2 and 4) containing a "converter" which "converts first code words assigned to the relatively dark colours into second code words which are assigned to the cor- responding brightened colours" (page 5, lines 15-17). This converter is analogous to the claimed color transforming means and functions in at least two states whereby the converter can either, in a first state, forward the color signals unchanged to the image repetition store (page 15, lines 7-15) or, in a second state, produce additional brightness signals to brighten the color signal associated with certain characters (page 15, lines 1-6).

Moreover, the converter UM1 (Fig. 4) is described as able to "contain a store in which the background colour which applies to the character array in question is intermediately stored, and the brightening of the relatively dark colours can take place in dependence upon the contents of said store" (page 15, lines 12-15). We agree with the examiner that this suggests a color look-up table to one of ordinary skill in the art, since the transforming device acts in accordance with the instructions stored in UM1.

While Nopp admittedly does not change the color tone

(Nopp page 4, line 21 to page 4a, line 2), this is taught by

Havel. Havel is directed to solving the same problem as Nopp,

namely, improving legibility of a color display by improving

contrast between displayed characters and their backgrounds

(Havel,

col. 1, lines 36-41). Havel accomplishes this by changing the output color of the background to a complementary color of the displayed character (Havel, col. 6, lines 14-20). This

transformation of one input color to a different output color, depending on the color of the character and/or stored supporting character information teaches the broadly claimed "cross-color mapping" function of claims 61 and 69.

We find that one of ordinary skill in the art, faced with the problem of improving legibility of a color display, would have been motivated to modify the system of Nopp to provide for color change, rather than merely increasing brightness, according to the teachings of Havel. In view of the teachings

of Nopp and Havel, one of ordinary skill in the art would have found the subject matter of claims 61 and 69 to be obvious.

We note that Appellant has not argued the limitation of mapping two respective hues on a single destination here found in claim 61. Instead, Appellant argues that the claimed invention is not obvious in view of the applied combination of references because Nopp fails to teach cross-color mapping, and Havel only teaches cross-color mapping of the background, not the characters themselves. Appellant's arguments are unpersuasive because he attacks the teachings of the references individually, rather than addressing their combined teachings. A combination of references leading to a conclusion of obviousness cannot be defeated by

attacking all of the references individually. <u>E.g.</u>, <u>In re</u>

<u>Merck & Co.</u>, 800 F.2d 1091, 1097, 231 USPQ 375, 380 (Fed. Cir. 1986); <u>In re Keller</u>, 642 F.2d 413, 426, 208 USPQ 871, 882 (CCPA 1981).

As discussed above, "cross-color mapping," given its broadest reasonable interpretation, merely requires transformation of a given input color to a different output color.

Havel clearly teaches transforming a given input color for the background of a character to a different output color in order to improve contrast. Nopp teaches transformation of the brightness of a character itself, as opposed to transformation of the back- ground. As discussed above, one of ordinary skill in the art would have known to combine these teachings to actually trans-form the color of the character in a color display, in order to improve contrast and legibility.

Appellant further argues that neither Nopp nor Havel teaches a color look-up table. We disagree. When evaluating references for purposes of obviousness, it is proper to take into account not only the specific teachings of the references, but also the knowledge of the skilled artisan.

E.g., In re Graves, 69 F.3d 1147, 1152, 36 USPQ2d 1697, 1701 (Fed. Cir. 1995), cert. denied, 517 U.S. 1124 (1996); In re

Preda, 401 F.2d 825, 826, 159 USPQ 342, 344 (CCPA 1968). As we found above, the disclosure of Nopp suggests a "color look-up table" in its description of UM1.

Furthermore, this teaching combined with the teachings of color

change in Havel would have suggested use of a "color look-up table" as claimed to one of ordinary skill in the art.

Appellant argues that claim 69 recites "content and/or supporting elements" which is not shown or suggested by Nopp or Havel. The Examiner responds to this argument on page 12 of the answer that this limitation reads on the control SAZ and SGZ shown in Figure 4 and described at page 14, lines 3-23. We find the Examiner's position is reasonable on its face and has not been challenged.

Accordingly, we sustain the rejection of claims 40, 41, 61, 64-66, 68, 69 and 76-77 over Nopp in view of Havel.

II. Claims 62, 63, 67 and 73 stand rejected over Nopp in view of Havel and further in view of Iwai. These claims are not argued separately with any specificity, therefore, they stand or fall with independent claims 61 and 69. Applicant has waived any specific arguments as to these dependent claims by failing to raise them in his brief to the board. See Becton Dickinson & Co.

v. C.R. Bard, Inc., 922 F.2d 792, 800, 17 USPQ2d 1097, 1103
(Fed. Cir. 1990) ("[W]e see no reason to depart from the sound practice

that an issue not raised by an appellant in its opening brief . . . is waived.").

Appellant's sole argument (found on page 6 of the brief) for overturning this rejection is:

Iwai et al does not show or suggest appellant's color transforming means recited in claims 61 and 69 and since claims 62, 63, 67 and 73 depend from one of claims 61 and 69, they are likewise allowable over the combination of Nopp, Havel and Iwai et al, whether taken alone or in combination for the reasons stated above with respect to claims 61 and 69.

Once again, Appellant makes the mistake of attacking the teachings of Iwai individually, rather than in combination with the teachings of Nopp and Havel. Merck, 800 F.2d at 1097, 231 USPQ at 380; Keller, 642 F.2d at 426, 208 USPQ at 882. As discussed above, Nopp as modified by Havel teaches the claimed color transforming means. Iwai further teaches additional elements of certain dependent claims. Therefore, Appellant's argument is unpersuasive.

Even if the claims were argued separately, however, they would have been obvious to one of ordinary skill in the art in light of the teachings of Iwai combined with the previously

discussed teachings of Nopp and Havel for the reasons stated by

the Examiner. Claims 67 and 73 depend from claims 61 and 69

respectively, and further recite a "histogram-former." Iwai expressly teaches "a chromaticity histogram generator 40" (col. 4, lines 26-28 and Fig. 3) for use in color mapping of a color image display system. Because Nopp, Havel and Iwai are all concerned with color image display systems, and more specifically with conversion of color data, one of ordinary skill in the art would consider their teachings together. It would have been obvious to a skilled artisan to incorporate the circuit of Iwai into the display system of Nopp as modified by Havel in order to optimize control of hues for better color contrast.

Claims 62 and 63 depend from claim 61 and further require that the "output of said color transforming means is retrocoupled to an input of said picture memory" (claim 62) and the contents of the picture memory is stored as a bit map (claim 63). Figure 1 of Iwai teaches a quantizer coupled to

an input of memory 14. Iwai's quantizer is analogous to the color trans- forming means because it selects the stored color data for each image (col. 4, lines 9-10). Memory or "frame buffer 14" cor- responds to a picture memory because it stores the pixel data—to be written in each location of the frame buffer (col. 3,

lines 27-31). Iwai also teaches that a bit mapped memory is conventional (col. 3, lines 27-31).

Based on the above teachings and Appellant's failure to argue these claims separately, the rejection of claims 62, 63, 67 and 73 over Nopp in view of Havel and further in view of Iwai is affirmed.

III. Claims 70-72 and 74-75 stand rejected over Nopp in view of Havel and further in view of PC Magazine or Staar.

These claims are not argued separately with any specificity, therefore, they stand or fall with independent claims 61 and 69. Applicant has waived any specific arguments as to these dependent claims by failing to raise them in his brief to the

board. <u>See Becton Dickinson</u>, 922 F.2d at 800, 17 USPQ2d at 1103.

Appellant's sole argument (found on page 6 of the brief) for overturning this rejection is:

Appellant submits that neither Staar or PC magazine teach or suggest the color transforming means recited in claims 61 and 69. Claims 70-72, 74 and 75 depend from one of claims 61 and 69 and are therefore allowable over the Nopp, Havel, PC Magazine and Staar for the reasons stated above with respect to claims 61 and 69.

As discussed above, this argument fails because it attacks the teachings of the references individually, rather than in

combination. Merck, 800 F.2d at 1097, 231 USPQ at 380; Keller,

642 F.2d at 426, 208 USPQ at 882. The claimed color transforming

means is taught by Nopp as modified by Havel. PC Magazine and Staar further teach additional elements of certain dependent claims. Therefore, Appellant's argument is unpersuasive.

Even if the claims were argued separately, however, they would have been obvious for the reasons stated by the

examiner. Claims 70-72 and 74 all depend from claim 69 and further recite a detector responsive to a numeric digit (claim 70), capital character (claims 71 and 74), character sequence, end of line or space (claim 72). Staar expressly teaches a capital letter detector for a text display (col. 4, lines 10-29 and Fig. 2). The PC Magazine article teaches that changing the color of a character in a text display system is well known (page 160, middle column, lines 7-15). These references are directed to highlighting certain characters depending on their position or type, rather than content, as recited in claim 69. Both Staar and PC Magazine are directed to the problem of making such characters more visible in a color display. Accordingly, one of ordinary skill in the art seeking to create contrast in a video display would have considered these references as well as Nopp

and Havel. Together, the teachings of Staar and PC Magazine would have suggested to one of ordinary skill in the art incorporating a detector for different character types in the visual display system of Nopp, as modified by Havel.

Claim 75 depends indirectly from claim 61 and further recites that in "said first state the total number of displayed colors is less than in said second state." Claim 75 is not argued separately and would have been obvious over the combined teachings of Nopp and Hovel for the reasons discussed above.

Based on the above teachings and Appellant's failure to argue these claims separately, the rejection of claims 70-72 and 74-75 over Nopp in view of Havel and further in view of PC Magazine or Staar is affirmed.

CONCLUSION

In view of the foregoing, we affirm the decision of the Examiner rejecting claims 40, 41, 61-68 and 75 under 35 U.S.C. § 112, first paragraph and claims 40, 41, and 61-77 under 35 U.S.C. § 103.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136.

AFFIRMED

JOHN C. MARTIN)
Administrative Patent	Judge)	
)	
)	
)	BOARD OF PATENT
MICHAEL R. FLEMING)	APPEALS AND
Administrative Patent	Judge)	INTERFERENCES
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